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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/660,811
Filing Date: September 13, 2000
Appellant(s): KNIGHTON ET AL.

Thomas M. Coester (Reg. No. 39,637)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/12/2005 appealing from the Office action mailed 02/09/2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5831621	PITO	11-1998
5991437	MIGDAL et al	11-1999
WO96/02106	VELLACOTT	01-1996
6421079	TRUC et al	07-2002
5799082	MURPHY et al	08-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4, 8-15, 18, and 19, are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,831,621 to Pito, in view of US Patent No. 5,991,437 to Migdal et al.

3. As for claims 1 and 13 Pito discloses, in column 5, lines 24-48, and in Figure 1, a camera or scanner (Element 10) which scans three dimensional object data. The scanner shown in Figure 1 is equivalent to the claimed digitizer, since they perform the same function. The orientation fixture, as claimed, is also shown in Figure 1, as Element 14. As the turntable rotates, the orientation of the object is changed from a first position to a second position, revealing a first aspect, or view, of the object at a first orientation, and revealing a second aspect, or view, of the object at a second orientation, relative to the scanner, or digitizer (Column 5, lines 35-45). Pito further discloses computer control and software, which is utilized to determine the "Next Best View". In other words, the software performs mathematic manipulation on the scanned images of the object, to determine what area of the object to look at next, and thereby automatically repositions the turntable, to obtain the desired object orientation. Furthermore, as stated in column 5, lines 33-35, ranges, or distances, are measured using triangulation techniques. As is known in the art, triangulation techniques are used to calculate the distance between to points, in this case, the distance between the orientation fixture and the digitizer, when distance information is not known, or predefined. It is the interpretation of the Examiner, that Figure 1, discussed in column 5, shows the digitizer and orientation fixture, as independent units. As for the limitation that the digitizer and the orientation fixture have no predefined relative position, the teachings of Migdal (column 7, lines 38-53) disclose the use of a 3D object to calibrate a scanning system. As discussed, the 3D calibration object is marked with geometric shapes so that the scanner can "find" the object, and accurately determine its distance

from the scanner (column 4, lines 40-45). In other words, at distance x from the scanner, how many pixels high and wide should the object be. Once the object is found, the system can be adjusted or calibrated based on known information about the geometric shapes marked on the object. This calibration technique is well known, and does not differ from that of Applicant, wherein Applicant's Specification (page 5, line 19 – page 6, line 14) discloses the use of indicia or physically observable structure for identifying and acquiring the orientation fixture. As for the additional limitations of claim 13, Migdal discloses in column 4, lines 34-36, that the development of portable scanning systems is desirable. Coupling units together for the purpose of portability is an obvious embodiment. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Pito and Migdal for the purpose of creating a highly accurate scanning system.

4. Regarding claim 2, in column 1, lines 23-33, Pito discloses measuring the distance between the range camera, or digitizer, and the surface of an object, which is equivalent to determining the position of the orientation fixture, relative to the digitizer, since the object to be scanned is sitting atop the orientation fixture, or turntable. Furthermore, as stated in column 5, lines 33-35, ranges, or distances, are measured using triangulation techniques. As is known in the art, triangulation techniques are used to calculate the distance between to points, in this case, the distance between the orientation fixture and the digitizer, when distance information is not known, or predefined. It should also be pointed out by the Examiner that the term "relative

position" is being interpreted as the distance between the digitizer and the orientation fixture, the claim does not require identification of the object.

5. As for claims 3 and 14, column 5, lines 57-67, Pito discloses a breakdown angle of a scanner, which is determined from the calibration of the scanner, or digitizer. While Pito does not specifically claim automatic calibration, calibration is taught. In re Venner, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958) (Appellant argued that claims to a permanent mold casting apparatus for molding trunk pistons were allowable over the prior art because the claimed invention combined "old permanent-mold structures together with a timer and solenoid which automatically actuates the known pressure valve system to release the inner core after a predetermined time has elapsed." The court held that broadly providing an automatic or mechanical means to replace a manual activity which accomplished the same result is not sufficient to distinguish over the prior art.) Therefore, it would have been obvious to add an auto calibration to allow for quick set up and measurement of more diverse objects.

6. With regard to claims 4 and 15, column 10, lines 1-9, teach the use of a computer and software, or host, for modeling a three dimensional representation of an object.

7. As for claims 8, 9, and 18, Migdal discloses in column 4, lines 34-36, that the development of portable scanning systems is desirable. Self-contained power sources make systems portable, which is not patentably significant. In re Lindberg, 194 F.2d 732, 93 USPQ 23 (CCPA 1952) (Fact that a claimed device is portable or movable is not sufficient by itself to patentably distinguish over an otherwise old device unless there

are new or unexpected results.) Therefore it would have been obvious to one of ordinary skill in the art to make portable and allow for measurement of remote locations.

8. With regard to claims 10 and 11, Migdal shows the use of geometric shapes (column 7, lines 38-53) for orientation fixture identification.

9. As for claims 12 and 19, in column 5, lines 23-32, Pito discloses the orientation fixture, Element 14 of Figure 1, as a turntable.

10. Claims 5-7, 16-17, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,831,621 to Pito, in view of US Patent No 5,991,437 to Migdal et al, an further in view of International Publication No. WO 96/02106 to Vellacott.

11. As for claims 5-7, 16-17, and 30, Pito discloses, in column 5, lines 24-48, and in Figure 1, a camera or scanner (Element 10) which scans three dimensional object data. The scanner shown in Figure 1 is equivalent to the claimed digitizer, since they perform the same function. The orientation fixture, as claimed, is also shown in Figure 1, as Element 14. As the turntable rotates, the orientation of the object is changed from a first position to a second position, revealing a first aspect, or view, of the object at a first orientation, and revealing a second aspect, or view, of the object at a second orientation, relative to the scanner, or digitizer. Pito further discloses computer control and software, which is utilized to determine the "Next Best View". In other words, the software performs mathematic manipulation on the scanned images of the object, to determine what area of the object to look at next, and thereby automatically repositions the turntable, to obtain the desired object orientation. **Furthermore, as stated in**

column 5, lines 33-35, ranges, or distances, are measured using triangulation techniques. As is known in the art, triangulation techniques are used to calculate the distance between to points, in this case, the distance between the orientation fixture and the digitizer, when distance information is not known, or predefined. It is the interpretation of the Examiner, that Figure 1, discussed in column 5, shows the digitizer and orientation fixture, as independent units. Column 10, lines 1-9, teach the use of a computer and software, or host, for modeling a three dimensional representation of an object, while Pito fails to teach communicating over a wireless link, as well as transmitting data remotely, page 1 of the Vellacott reference discloses the use of LAN systems, wireless communications, as well as remote transmission, and that host PC's are well known in the art. It would have been obvious to one of ordinary skill in the art to combine the teachings of Vellacott and Pito, for the purpose of creating a more robust three-dimensional scanning system.

12. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,831,621 to Pito et al., in view of US Patent No. 6,421,079 B1 to Truc et al.

13. The rejection of these claims in the Final Rejection of 02/09/2005, paragraph 14, clearly does not incorporate the teachings of the Migdal reference. Migdal's presence in the paragraph 12, is in fact a typographical error, and should have been deleted, hence the rejection only combines the teachings of Pito and Truc, as evidenced by the motivational statement at the end of paragraph 14, of the Final Rejection mentioned above.

14. As for claims 27-29 Pito discloses, in column 5, lines 24-48, and in Figure 1, a camera or scanner (Element 10) which scans three dimensional object data. The scanner shown in Figure 1 is equivalent to the claimed digitizer, since they perform the same function. The orientation fixture, as claimed, is also shown in Figure 1, as Element 14. As the turntable rotates, the orientation of the object is changed from a first position to a second position, revealing a first aspect, or view, of the object at a first orientation, and revealing a second aspect, or view, of the object at a second orientation, relative to the scanner, or digitizer. Pito further discloses computer control and software, which is utilized to determine the "Next Best View". In other words, the software performs mathematic manipulation on the scanned images of the object, to determine what area of the object to look at next, and thereby automatically repositions the turntable, to obtain the desired object orientation. As for rescanning points of interest at higher resolution, while the Pito reference does not specifically disclose what is claimed, the Truc reference teaches (column 1, lines 33-41) that rescanning selected images at higher resolution is desirable. Furthermore, column 15, lines51-67, disclose just that, a scanner which rescans selected images (points of interest) at a higher resolution. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Pito and Truc for the purpose of creating a scanning system, which is capable of producing quality high-resolution images.

15. Claims 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,799,082 to Murphy et al.

16. As for claims 20 and 23, in column 15, lines 6-31, Murphy discloses freezing or locking image data, and further preventing transmission to another person or facility (i.e. remotely), except those who are authorized, and implement the proper request for downloading the information. Furthermore, the fact that information can be transmitted back and forth is itself a teaching of a distributive network. While the Murphy reference may not specifically disclose unlocking and image-capturing system, it is the contention of the Examiner that the frame lock mechanism, which prevents image data from being downloaded, serves the same purpose. (Official Notice) Therefore, it would have been obvious to one of ordinary skill in the art to employ the locking mechanism of Murphy, for the purpose of maintaining an uncompromised network.

17. With regard to claims 21 and 22, column 13, lines 53-67, disclose a camera system, which determines position information (i.e. location coordinates, angular orientation coordinates, and distance to the object) or three dimensional image data. Claim 16 of Murphy discloses an image-capturing device, which can be reprogrammed remotely.

18. As for claims 24-26, Murphy discloses, in column 13 lines 30-52, and column 15, lines 19-47, encrypting algorithms, and decryption using position parameters of the object, as well as storage limitations and uploading encrypted image data.

(10) Response to Argument

Appellant's Arguments

With regard to claims 1, 4, and 12, it should first be noted that Appellant has put forth no arguments with regard to the patentability of claims 4 and 12, other than their dependency on claim 1. Therefore, claims 1, 4, and 12 stand or fall together. Appellant argues (Page 11, Section B) that neither alone or in combination, Pito in view of Migdal fails to teach, "the orientation fixture and the digitizer are physically independent units without a predefined relative position", as recited in claim 1, and further argues the motivation to combine the references.

Examiners Response

Figure 1 of the Pito reference, clearly shows the orientation fixture (14) and the digitizer (10) as separate, independent units. Figure 1 does not show the units electrically or mechanically coupled together, which is Appellant's own definition of "physically independent" shown on page 13, lines 9-11 of the Brief. While Figure 1 may simply be a schematic of the Pito invention, it would be obvious to one of ordinary skill in the art that the connection or non-connection of the two units is not critical to operation of the system. Moreover, this figure clearly shows the two units not connected, or as physically independent units. As for the Migdal reference, regarding the limitation that the digitizer and the orientation fixture have no predefined relative

position, the teachings of Migdal (column 7, lines 38-53) state that the two units "find" one another through the use of a calibration technique. This operation is further taught in column 13, lines 10-32, wherein a calibration object is used to determine the distance between itself and a scanner. As previously stated, this calibration technique is well known, and does not differ from that of Appellant, wherein Appellant's Specification (page 5, line 19 – page 6, line 14) discloses the use of indicia or physically observable structure for identifying and acquiring the orientation fixture. In other words, the Migdal reference discloses an orientation fixture and a scanner having no predefined relative position. As for motivation to combine, Appellant alleges that the Final Rejection of 02/09/2005 lacks any motivation to combine, however the rejection clearly contains the statement "it would have been obvious to one of ordinary skill in the art to combine the teachings of Pito and Migdal for the purpose of creating a highly accurate scanning system", which can be found at the end of paragraph 3, under "Grounds of Rejection".

Appellant's Arguments

With respect to claim 2, Appellant argues (Page 14, Section C) that the combination of Pito and Migdal fail to teach "at least one of the digitizer and the orientation fixture capable of automatically locating a relative position of the other", and that locating a relative position involves identifying the object being located.

Examiner's Response

The cited passages of the Pito reference teach finding a distance from a camera or scanner, to an object centered on a turntable. While the Examiner does not disagree that the object centered on the turntable or orientation fixture, the distance between the centerline, which coincides with the center of the object as well as the orientation fixture, is not known, but rather the distance from the scanner to the orientation fixture is calculated using triangulation techniques, which the Examiner asserts is equivalent to the digitizer or scanner automatically locating the relative position of the orientation fixture. In addition, Appellant's assertion that locating a relative position involves identifying the object being located, is in fact reading limitations into the claim, which are not present. The claim does not require identification of the object. As such, Pito discloses what is claimed in claim 2 by Appellant.

Appellant's Arguments

As for claims 3 and 14, Appellant argues (Page 16, Section D) that Pito fails to teach "the digitizer capable of automatic calibration", and the motivation to incorporate such a teaching into that of Pito.

Examiner's Response

The cited passage of the Pito reference states that calibration of the scanner or digitizer does in fact take place. On page 17 of the Brief, Appellant states that the findings of In re Venner, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958) due in fact render the mere automation of a known system unpatentable. Appellant asserts that claim 2 is patentable because it depends on claim 1, which he believes to be non-obvious. The Examiner has shown, with respect to claim 1 that the limitations of claim 1 are in fact taught by the combination of Pito and Migdal. As for motivation, the Examiner has established motivation to combine with respect to claim 1, and need not show further motivation to combine, with respect to claim 3, since the Examiner has not relied on the teachings of Migdal to reject this claim.

Appellant's Arguments

With respect to claims 5, 6, 16, 17, and 30, Appellant argues (Page 22, Section H) that there is no motivation to combine the teachings of Vellacott with those of Pito and Migdal, and that Vellacott teaches away from what is claimed.

Examiner's Response

Page 1 of the Vellacott reference states that it is known in the field to interface cameras, with PC's, LAN systems, WAN systems, all of which are know to be utilized for remote transmission, as well as wireless communication. As for page 8, paragraph

1, of Vellacott, the reference states that the Vellacott system can be directly connected to a computer network or deployed remotely in the field using a wireless link. Vellacott does teach that his system should be used where a host computer is not practical or cost effective, however the reference still teaches that it is known in the art to use a host PC for the purpose of transmitting data. With regard to motivation, the use of wireless links for remote transmission, would in fact make any system more robust and versatile, and need not specifically be disclosed, because one of ordinary skill in the art would appreciate that such features would improve many inventions.

Appellant's Arguments

Regarding claim 7, Appellant argues (Page 24, Section I) that Vellacott fails to teach the digitizer communicating with the orientation fixture over a wireless link.

Examiner's Response

Page 1 of the Vellacott reference states that it is known in the field to interface cameras, with PC's, LAN systems, WAN systems, all of which are know to be utilized for remote transmission, as well as wireless communication.

Appellant's Arguments

Regarding claims 8, 9, and 18, Appellant argues (Page 17, Section E) that nowhere in the cited references are self-contained power sources disclosed.

Examiner's Response

The Examiner has relied on a passage from the Migdal reference, which teaches (column 4, lines 34-36) the desirability to develop portable scanning systems. It is the contention of the Examiner, that portable systems utilize self contained power sources such as batteries, capacitors, and the like, and therefore the teaching of portability, infers the use of self contained power sources.

Appellant's Arguments

With respect to claims 10 and 11, Appellant argues (Page 19, Section F) that Pito and Migdal fail to teach a "distinctive feature that permits the digitizer to acquire the orientations fixture by scanning an area for the distinctive feature" or "a localized energy source that permits the digitizer to acquire the orientation fixture".

Examiner's Response

The Examiner relies on the passage of Migdal cited above, with regard to column 7, lines 38-53, wherein an object, which is centered on the turntable or orientation fixture, the distance between the centerline, which coincides with the center of the

object as well as the orientation fixture, is not known, but rather the distance from the scanner to the orientation fixture is calculated using triangulation techniques, which the Examiner asserts is equivalent to the digitizer or scanner automatically locating the relative position of the orientation fixture. This passage further discusses Figure 2a, which is shown to have distinctive features, or geometric shapes, which are utilized on the process. Moreover, whether using a localized energy source or a geometric shape, the two units are capable of finding each other, or acquire one another.

Appellant's Arguments

Regarding claims 13, 15, and 19, it should first be noted that Appellant has put forth no arguments with regard to the patentability of claims 15 and 19, other than their dependency on claim 13. Therefore, claims 13, 15, and 19 stand or fall together. Appellant argues (Page 21, Section G) that neither Pito nor Migdal teach a "digitizer and orientation fixture integrally couple as a single unit", and that if the combination teaches "physically independent units", with respect to claim 1, it cannot possibly teach "integrally coupled units", with respect to claim 13.

Examiner's Response

The Examiner has relied on a passage from the Migdal reference, which teaches (column 4, lines 34-36) the desirability to develop portable scanning systems, and that the mere teaching of portability, infers that the components of the system be coupled for

that reason. Furthermore, the act of making portable, does not render an invention patentable. As for teaching both physically independent units, and integrally coupled units, many inventions have been made portable, wherein all components are combined in a single unit, or not portable, wherein components may not be combined in a single unit, it is possible for a reference to teach both, and the Migdal reference does just that.

Appellant's Arguments

With regard to claims 20 and 21, it should first be noted that Appellant has put forth no arguments with regard to the patentability of claim 20, other than its dependency on claim 20. Therefore, claims 20 and 21 stand or fall together. Appellant argues (Page 26, Section K) that the Murphy reference does not teach the limitations of "receiving a request over a distributed network to authorize operation of a lockable image capture system at a node remote from the image capture system" and "sending an authorization data to the image capture across a distributed network such that the image capture system is unlocked and enabled to capture an image".

Examiner's Response

The cited passage relied upon in Murphy (column 15, lines 6-31) teaches freezing or locking image data and further preventing transmission to another person or facility (i.e. remotely), except those who are authorized, and implement the proper

request for downloading the information. Furthermore, the fact that information can be transmitted back and forth is itself a teaching of a distributive network. While the Murphy reference may not specifically disclose unlocking an image-capturing system, it is the contention of the Examiner that the frame lock mechanism, which prevents image data from being downloaded, or altered or edited, serves the same purpose. Appellant's claim does not require prevention of viewing stored frames, merely prevention of access to an image capture device, until authorization is received.

Appellant's Arguments

Regarding claim 22, Appellant argues (Page 27, Section L) that Murphy fails to teach "reprogramming a reconfigurable array of logic of the image capture system from a remote node".

Examiner's Response

Appellant has confused the rejection of claim 21 with that of claim 22. Paragraph 17, of the Final Rejection, dated 02/09/2005 has two parts. The later being drawn to claim 21, which discloses, in claim 16 of Murphy, and further discussed in column 15, line 61 through column 16, line 10, programming a logic circuit.

Appellant's Arguments

Regarding claims 23-26, it should first be noted that Appellant has put forth no arguments with regard to the patentability of claims 24-26, other than their dependency on claim 23. Therefore, claims 23-26 stand or fall together. Appellant argues (Page 28, Section M) that Murphy fails to teach "upon receipt of authorization from a remote node on the distributed network".

Examiner's Response

The Examiner relies on column 15 lines 6-31 wherein Murphy discloses freezing or locking image data, and further preventing transmission to another person or facility (i.e. remotely), except those who are authorized, and implement the proper request for downloading the information. Furthermore, the fact that information can be transmitted back and forth is itself a teaching of a distributive network.

Appellant's Arguments

With respect to claims 27-29, it should first be noted that Appellant has put forth no arguments with regard to the patentability of claim 28, other than its dependency on claim 27. Therefore, claims 27-29 stand or fall together. Appellant argues (Page 25, Section J) that Pito in view of Truc fails to teach the limitations regarding a rescan, and

that Truc is non-analogous art. Appellant also states that he was unable to determine on what basis the Migdal reference was relied upon, with respect to these claims.

Examiner's Response

First off, the rejection of these claims in the Final Rejection of 02/09/2005, paragraph 14, clearly does not incorporate the teachings of the Migdal reference. Migdal's presence in the paragraph 12, is in fact a typographical error, and should have been deleted, hence the rejection only combines the teachings of Pito and Truc, as evidenced by the motivational statement at the end of paragraph 14, of the Final Rejection mentioned above. Secondly, both pieces of art teach a scanning technique, which makes them analogous art. Thirdly, the Truc reference clearly shows that rescanning, for the sake of capturing a better quality image, is in fact desirable and/or taught in Column 15, lines 51-67, where Truc discloses a rescan process.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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